

Abstract

SECURITY READER FOR AUTOMATIC DETECTION OF  
TAMPERING AND ALTERATION

5           A document (10) is covered by a laminate (13) comprising a layer of  
microspheres (16) over an adhesive layer (14) covering a source image (12) such  
as a photograph, printed matter, or a bar code arranged on a substrate (11). Light  
impinging on the document (10) is split by the optical properties of the microspheres (16)  
and underlying specular reflectors. The remaining light passes through the microspheres  
10          (16), through the adhesive layer (14) and strikes the substrate (11) or source image (12) on  
the document (10), and is reflected (18) and scattered (20). Alternatively, the laminate  
(13) can comprise a plain or clear layer of polyester without microspheres over the  
adhesive layer (14). Light impinging on the laminate (13) passes through the polyester and  
laminate (14) to strike the substrate (11) or source image (12) where it is reflected and  
scattered. A first light source (24) directs light to the document (10). A second light  
15          source (26,27) directs light towards a beam splitting mirror (23) which reflects the light to  
the document (10). The light turning properties of the mirror (23) produce a light source  
which appears to an image receiver (40) as being returned from the surface of the  
document (10) at an angle of less than 1°. The image receiver (40) passes a signal via line  
20          (32) to a personal computer (41) which processes the received information. Such  
processing is to establish whether the document (10) includes a retroreflective laminate, a  
plain polyester laminate, or neither. Additionally, further processing can establish whether  
the document (10) has been tampered with, altered, or forged.